

CLAIMS

1. A recording condition setting method of setting record timing conditions of an optical disk device when a laser beam pulse is created and information is recorded on a recording surface of an optical disk rotated by a constant angular velocity, the recording condition setting method comprising the steps of:

acquiring a plurality of setting values of the record timing conditions for a number of group data conforming to a linear velocity of the optical disk at a record position on the recording surface where the information is recorded; and

setting the plurality of setting values for the number of group data to the optical disk device one by one at the number of times.

2. The recording condition setting method according to claim 1, wherein the number of group data include parameters which specify a configuration of the laser beam pulse.

3. The recording condition setting method according to claim 2, wherein the parameters contain any of a pulse width of the laser beam pulse, a rise timing of the laser beam pulse, and a fall timing of the laser beam pulse.

4. The recording condition setting method according to claim 3, wherein the parameters contain the rise timing of the pulse and the fall timing of the pulse, and the setting step is configured so that the plurality of setting values for the number of group data are respectively set one by one with respect to each of the number of group data containing the rise timing and the fall timing.

5. The recording condition setting method according to any one of claims 1 to 3, wherein the acquiring step is configured so that a plurality of values each depending on a length of a mark area to be formed on the recording surface are acquired with respect to each of the number of group data, respectively.

6. The recording condition setting method according to claim 5, wherein the setting step is configured so that each of the plurality of values for the number of group data is set to the optical disk device one by one with respect to each of a plurality of lengths of mark areas.

7. The recording condition setting method according to any one of claims 1 to 3, wherein the acquiring step is configured so that either a plurality of values each depending on a length of a space area immediately preceding a mark area to be formed on the recording surface or a plurality of values each depending on a length of a space area immediately following the mark area are acquired with respect to each of the number of group data, respectively.

8. The recording condition setting method according to claim 7, wherein the setting step is configured so that each of the plurality of values for the number of group data is set to the optical disk device one by one with respect to each of a plurality of lengths of space areas.

9. The recording condition setting method according to any one of claims 1 to 8, wherein the acquiring step is configured so that at least one of the plurality of setting values for the number of group

data is acquired based on a known relation formula which represents a relation between the linear velocity and the setting value.

10. The recording condition setting method according to any one of claims 1 to 8, wherein the acquiring step is configured so that
5 at least one of the plurality of setting values for the number of group data is acquired from results of predetermined operations performed based on a plurality of sets of a known linear velocity and a known setting value.

11. The recording condition setting method according to claim
10 10, wherein the predetermined operations are either approximation computations or interpolation computations.

12. A recording method of recording information on a recording surface of an optical disk rotated by a constant angular velocity, by creating a laser beam pulse and using record timing
15 conditions of an optical disk device, the recording method comprising the step of recording the information on the optical disk using the record timing conditions set up by the recording condition setting method according to any one of claims 1 to 11.

13. A computer-readable program for causing a computer of an
20 optical disk device to execute a recording condition setting method, wherein the optical disk device records information on a recording surface of an optical disk rotated by a constant angular velocity, and the recording condition setting method sets record timing conditions of the optical disk device when a laser beam pulse is created and the

information is recorded on the optical disk, the recording condition setting method comprising the steps of:

5 acquiring a plurality of setting values of the record timing conditions for a number of group data conforming to a linear velocity of the optical disk at a record position on the recording surface where the information is recorded; and

 setting the plurality of setting values for the number of group data to the optical disk device one by one at the number of times.

10 14. A computer-readable recording medium embodied therein for causing a computer of an optical disk device to execute the computer-readable program according to claim 13.

 15. An optical disk device which records information on an optical disk, the optical disk device comprising:

15 a linear-velocity acquiring unit acquiring a linear velocity of the optical disk at a record position on a recording surface of the optical disk which is rotated by a constant angular velocity;

 a setting-value acquiring unit acquiring a plurality of setting values of record timing conditions for a number of group data, respectively, by retrieving one of a plurality of setting values, which
20 are obtained beforehand for every linear velocity for the number of group data, based on the linear velocity acquired by the linear-velocity acquisition unit;

 a setting unit setting the plurality of setting values for the number of group data to the optical disk device one by one at the
25 number of times; and